Integration of Earth Remote Sensing into the NOAA/NWS Damage Assessment Toolkit

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Near Real Time Data for Earth Science and Space Weather Applications

Andrew Molthan, Jason Burks, Parks Camp, Kevin McGrath, Jordan Bell

Following the occurrence of severe weather, NOAA/NWS meteorologists are tasked with performing a storm damage survey to assess the type and severity of the weather event, primarily focused with the confirmation and assessment of tornadoes. This labor-intensive process requires meteorologists to venture into the affected area, acquire damage indicators through photos, eyewitness accounts, and other documentation, then aggregation of data in order to make a final determination of the tornado path length, width, maximum intensity, and other characteristics. Earth remote sensing from operational, polar-orbiting satellites can support the damage assessment process by helping to identify portions of damage tracks that are difficult to access due to road limitations or time constraints by applying change detection techniques. In addition, higher resolution commercial imagery can corroborate ground-based surveys by examining higher-resolution commercial imagery.

As part of an ongoing collaboration, NASA and NOAA are working to integrate near real-time Earth remote sensing observations into the NOAA/NWS Damage Assessment Toolkit, a handheld application used by meteorologists in the survey process. The team has recently developed a more streamlined approach for delivering data via a web mapping service and menu interface, allowing for caching of imagery before field deployment. Near real-time products have been developed using MODIS and VIIRS imagery and change detection for preliminary track identification, along with conduits for higher-resolution Landsat, ASTER, and commercial imagery as they become available. In addition to tornado damage assessments, the team is also investigating the use of near real-time imagery for identifying hail damage to vegetation, which also results in large swaths of damage, particularly in the central United States during the peak growing season months of June, July, and August. This presentation will present an overview of recent activities, challenges and successes, best practices, and opportunities for future work and collaboration.